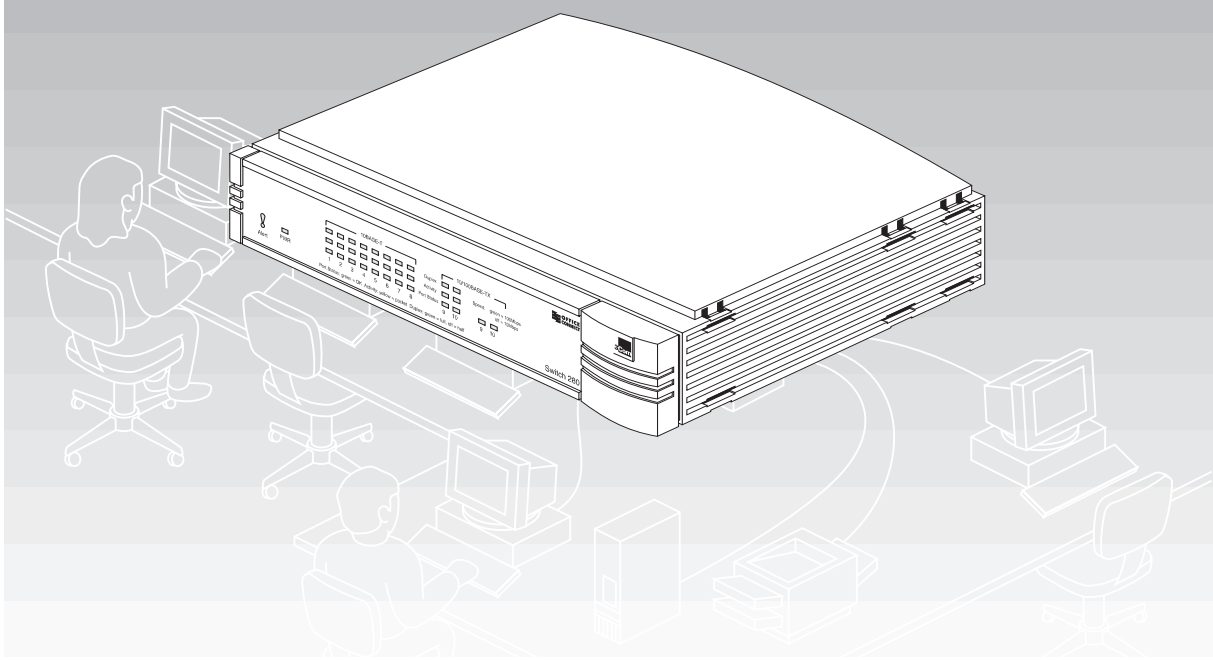
OFFICECONNECT® SWITCH 280

3C16732

USER GUIDE



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INTRODUCTION

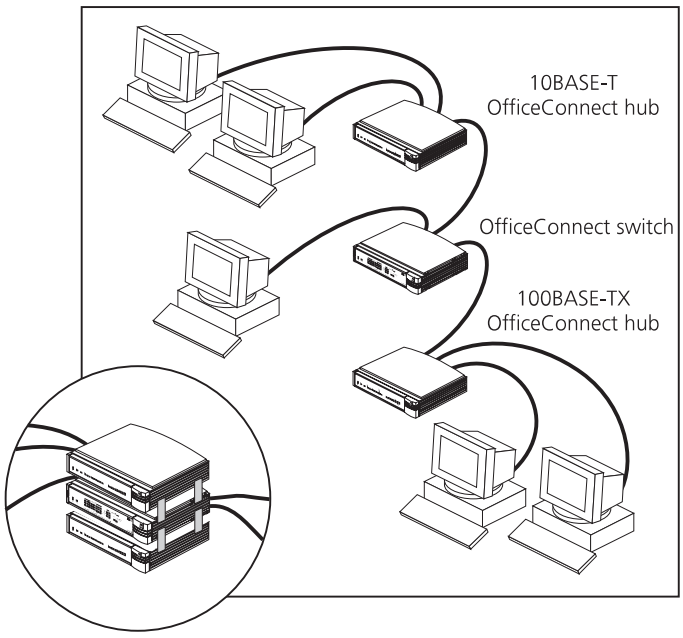
Welcome to the world of networking with 3Com®.

In the modern business environment, communication and sharing information is crucial. Computer networks have proved to be one of the fastest modes of communication but until recently only large businesses could afford the networking advantage. The OfficeConnect® product range from 3Com has changed this, bringing networks to the small office.

As the power of workstations and business applications increases, heavier demands are made on the available network bandwidth that, if unchecked, can lead to performance problems in a hub-based setup. Installing the OfficeConnect Switch 280 allows your network to be segmented so that traffic can be contained effectively, reducing the overall load without affecting access to critical resources.

The switch is ideal for use with other OfficeConnect products. It is compact and attractively designed for desktop use. It is part of the OfficeConnect range which neatly stacks together with clips, providing a range of facilities. For information on these products, see the "OfficeConnect Product Range" sheet that accompanies this product.

When referring to the OfficeConnect Switch 280, this guide uses the term 'switch'.



Small Network with OfficeConnect Switch (Circle Shows Units Clipped Together)

The switch has eight 10BASE-T ports and two 10/100BASE-TX ports. This allows you to set up a network with both 10BASE-T and 100BASE-TX hubs and workstations.

This guide helps you get the most out of your switch.

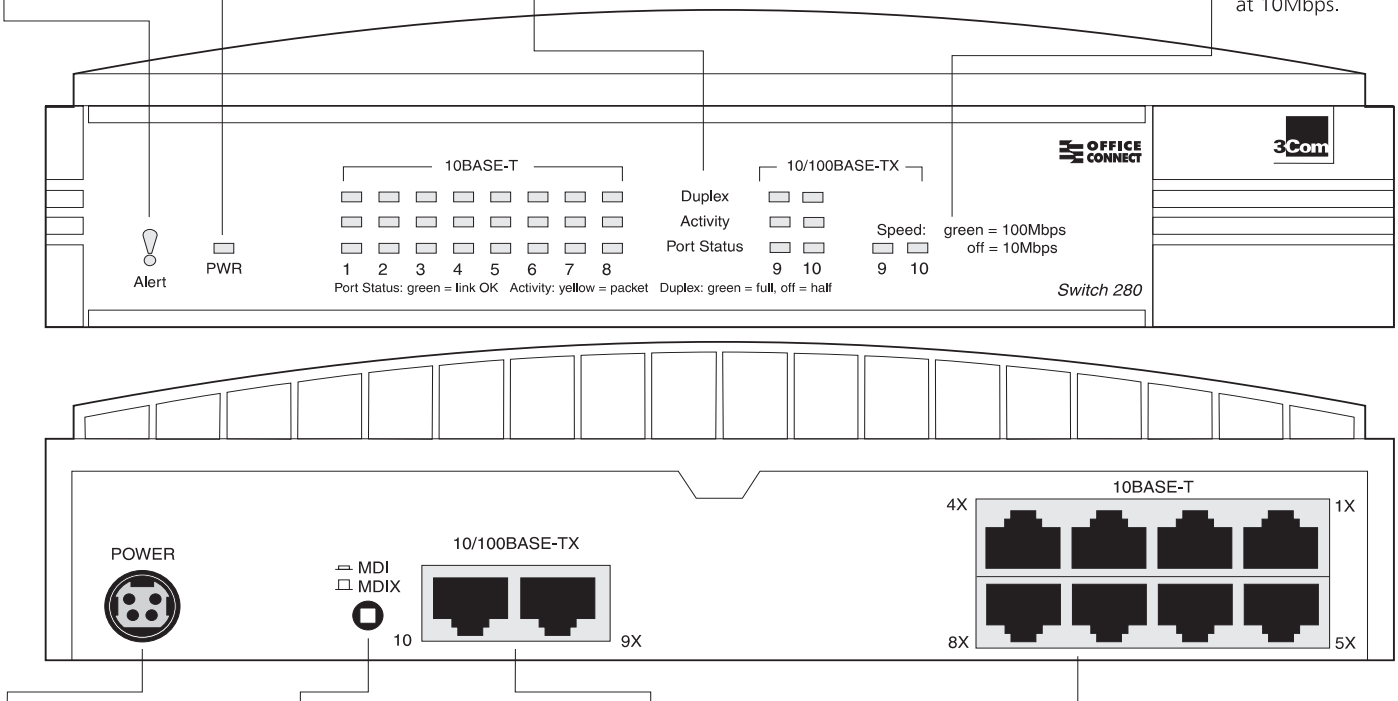
CREATING YOUR NETWORK

Alert LED
orange
Off when the unit is operating correctly. Flashes for a short period of time after power on, for self test. If the LED is continuously lit, there may be a problem. Refer to the "Problem Solving" section.

Power LED
green
Indicates that the power supply to the switch is present.

Status LEDs (ports 1 to 10)
If the **Port Status LED** is on (*green*), the link between the port and the next piece of network equipment is OK. If the LED is off, nothing is connected, or the connected device is switched off, or there is a problem with the connection (refer to the "Problem Solving" section).
The **Activity LED** flashes (*yellow*) each time a packet passes through the port. If the **Duplex LED** is on (*green*), the port is in full duplex mode. If the LED is off, the port is in half duplex mode.

Speed LEDs (ports 9 and 10)
green
If the LED is on, the port is operating at 100Mbps. If the LED is off, the port is operating at 10Mbps.



Power Adapter socket
Only use the power adapter that is supplied with the OfficeConnect switch. Do not use any other adapter.

MDI/MDIX switch
Affects the operation of port 10. If you are connecting a hub to the port, set to MDI (in), otherwise set to MDIX (out). Refer to the "Connecting OfficeConnect Hubs to Your Switch" section.

Two 10/100BASE-TX ports
Use suitable TP cable with RJ45 connectors. You can connect the OfficeConnect switch to any workstation or OfficeConnect hub that has a 10BASE-T or 100BASE-TX port. Each port is capable of auto-negotiating for 10Mbps or 100Mbps full and half duplex operation.

Eight 10BASE-T ports
Use suitable TP cable with RJ45 connectors. You can connect the OfficeConnect switch to any workstation or OfficeConnect hub that has a 10BASE-T port. Each port is capable of auto-negotiating for 10Mbps full and half duplex operation.

Networking Terminology

A **Network** is a collection of workstations (for example, IBM-compatible PCs) and other equipment (for example, printers), connected for the purpose of exchanging information or sharing resources. Networks vary in size, some are within a single room, others span continents.

A **Local Area Network (LAN)** is a network, usually in an office, that spans no more than a single site.

Ethernet is a type of LAN, referring to the technology used to pass information around the network. It operates at 10Mbps (megabits per second).

Fast Ethernet is a type of LAN that runs up to ten times faster than standard Ethernet. It operates at 100Mbps.

10BASE-T is the name given to the Ethernet protocol that runs over **Twisted Pair (TP)** cable.

100BASE-TX is the name given to the Fast Ethernet protocol that runs over **Twisted Pair (TP)** cable.

A **Network Loop** occurs when two pieces of network equipment are connected by more than one path.

A **Segment** is the length of cable connected to a port.

Packets are the units of information your workstations and other equipment send to each other over the network. A **Frame** is the data part of the packet and can be **Unicast** (sent to a single device), **Multicast** (sent to multiple devices), or **Broadcast** (sent to all devices).

Bandwidth refers to the amount of network traffic the network can hold at any one time (information capacity) measured in **bits per second (bps)**. Workstations or applications that use the network heavily are referred to as using high bandwidth (these are usually users who do a lot of graphical or multi-media work across the network). Fast Ethernet has a higher bandwidth than Ethernet, so it can cope with larger amounts of traffic, which results in faster operation.

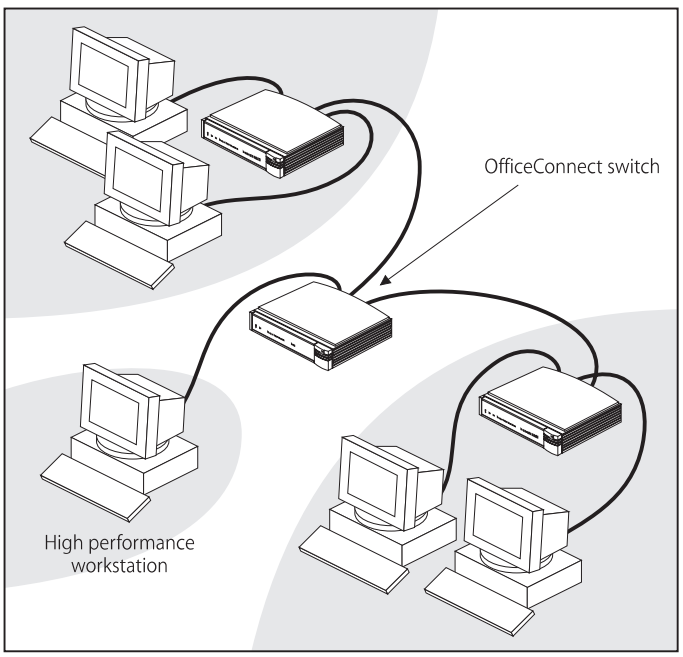
Full duplex operation allows information to be transmitted and received simultaneously and, in effect, doubles the potential throughput of a link.

How the Switch Can Be Used

Switching

When a network of repeater hubs is in operation, any information that is sent by the workstations is passed around the whole network (regardless of the destination of the information) which results in a lot of unnecessary traffic that can slow it down. The switch solves this problem because it 'listens' to the network and automatically learns what workstations can be reached through its ports. It can then selectively pass on any information by transmitting the traffic from the relevant port only (instead of all ports like a repeater hub). This operation is called 'switching'.

The switch effectively divides up your network, localizing the network traffic and passing on traffic as necessary (as shown in the diagram). If you have workstations that communicate frequently in the same part of the network, traffic between them is not passed to the remainder of the network, reducing the load. If you have any high performance workstations that require a lot of bandwidth, connect them directly to the switch.



The Switch Separates Your Network and Controls the Information Effectively

Connecting 10BASE-T and 100BASE-TX Networks

The two 10/100 ports can each be connnected to either a 10BASE-T or 100BASE-TX network. If you have both types of network, you can connect them using the switch so all your workstations can communicate.

Alternatively, if you want to improve performance by introducing 100BASE-TX (using an OfficeConnect 100BASE-TX hub for example), the switch protects your investments because it also maintains 10BASE-T connections to your original network equipment.

Before You Start

Your OfficeConnect switch comes with:

- One power adapter for use with the switch
- One power cord
- A Warranty Registration card for you to fill out and return
- Four rubber feet
- Four stacking clips
- An OfficeConnect Product Range sheet
- This guide

Hub Connections

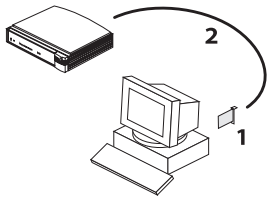
To connect OfficeConnect hubs to your switch, you need:

- One suitable TP cable for each hub.

Workstation Connections

To connect workstations or other equipment (such as servers) directly to your switch ports, you need:

1 One 10BASE-T or 100BASE-TX adapter card for each workstation. 3Com produce a range of easy to install network adapters, which provide your workstation with a 10BASE-T or 100BASE-TX connection.



2 One suitable TP cable for each workstation.

In order to comply with the 10BASE-T standard, ports designed for workstation connections have been marked with the graphical symbol 'x'. This denotes a crossover in the port's internal wiring, for example 1x, 2x, 3x...

You also need a network operating system running on your workstations.

Twisted Pair (TP) Cables

To connect your hubs and workstations to the switch, you must use 'straight-through' TP cables with RJ45 connectors (all OfficeConnect products use RJ45 type connectors). Your supplier should stock suitable cables.

Cables can be shielded (screened) or unshielded; we recommend that you use shielded cable. Cables used for 100BASE-TX connections must be data grade (Category 5). The maximum length you can use is 100m (328ft).

A 'straight-through' cable is one where each pin of one connector is connected to the same pin of the other connector.

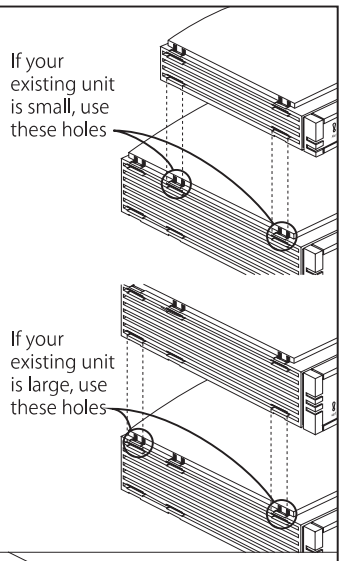
Wall mounting screw hole guide
142mm (5.6in)

Using the Rubber Feet and Stacking Clips

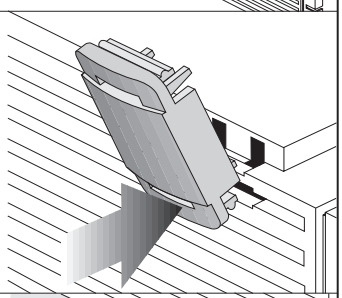
The four self-adhesive rubber feet prevent your switch from sliding around on your desk. Stick the feet to the marked areas at each corner of the underside of your switch.

The four stacking clips are used for neatly and securely stacking your OfficeConnect units together. **You can stack up to four units. Small units must be stacked above large units.** To stack your units, secure the clips on one side and then on the other. Use the following method to secure one side:

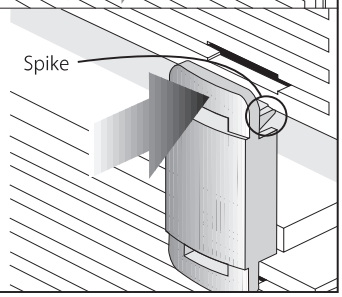
1 Place your new unit on a flat surface. Your clips fit in these positions on the side of the unit:



2 Position a clip over one of these holes and push it in until it clicks into place. Repeat this for the other clip position on the same side.



3 Keeping the front of the units aligned, rest the bottom of the existing unit on the clips' spikes. Push the clips firmly into the existing unit until they click into place.



Repeat these steps to secure the other side.

To remove a clip, hold the units firmly with one hand and hook the first finger of your other hand around the back of the clip. Use reasonable force to pull it off.

Positioning Your OfficeConnect Switch

When installing your OfficeConnect switch, ensure:

- It is out of direct sunlight and away from sources of heat.
- Cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.
- Water or moisture cannot enter the case of the unit.
- Air flow around the unit and through the vents in the side of the case is not restricted. We recommend you provide a minimum of 25mm (1in) clearance.

Wall Mounting the OfficeConnect Switch

There are two slots on the underside of the OfficeConnect switch which are used for wall mounting. You can mount the unit with the LEDs facing upwards or downwards, to suit your needs.

When wall mounting the unit, ensure that it is within reach of the power outlet.

You need two suitable screws. Ensure that the wall you are going to use is smooth, flat, dry and sturdy. Make two screw holes which are 142mm (5.6in) apart. Use the guide at the top of this page to mark the position of the holes. Fix the screws into the wall, leaving their heads 3mm (0.12in) clear of the wall surface.

Remove any connections to the unit and locate it over the screw heads. When in line, gently push the unit on to the wall and move it downwards to secure. When making connections, be careful not to push the unit up and off the wall.

CAUTION: *Only wall mount single units. Do not wall mount stacked units.*

Connecting Workstations and Other Equipment to Your Switch

WARNING**:** *Ensure you have read the Important Safety Information section carefully before you start.*

ACHTUNG**:** *Versichern Sie sich, daß Sie den Abschnitt mit den wichtigen Sicherheitshinweisen gelesen haben, bevor Sie das Gerät benutzen.*

AVERTISSEMENT**:** *Assurer que vous avez lu soigneusement la section de L'information de Sécurité Importante avant que vous commenciez.*

CAUTION**:** *Do not power the switch off and on quickly. Wait about 5 seconds between power cycles.*

All the ports on the switch have full and half duplex auto-negotiation. This means that if the device connected to a port supports auto-negotiation, the highest compatible mode is negotiated. Full duplex mode can only be achieved through auto-negotiation.

CAUTION: *The equipment connected to the switch must be set to operate in auto-negotiate or half duplex mode. Do not set to full duplex mode. Full duplex can only be achieved through auto-negotiation.*

Connecting workstations and other equipment to your switch is easy. To connect a workstation to any of the switch's eight 10BASE-T ports, or to either of the switch's 10/100BASE-TX ports, use a 'straight-through' TP cable. Refer to "Twisted Pair (TP) Cables" for further information.

If you are using port 10 to connect a workstation, ensure the MDI/MDIX switch is set to MDIX (out).

TP cables are very easy to use. To connect a cable, simply slot the connector into the relevant RJ45 port. When the connector is fully in, its latch locks it in place. To disconnect the cable, push the connector's latch in and remove it.

The switch detects all port connections, so you can start using your network immediately. When you need more ports, simply add OfficeConnect units.

Connecting OfficeConnect Hubs to Your Switch

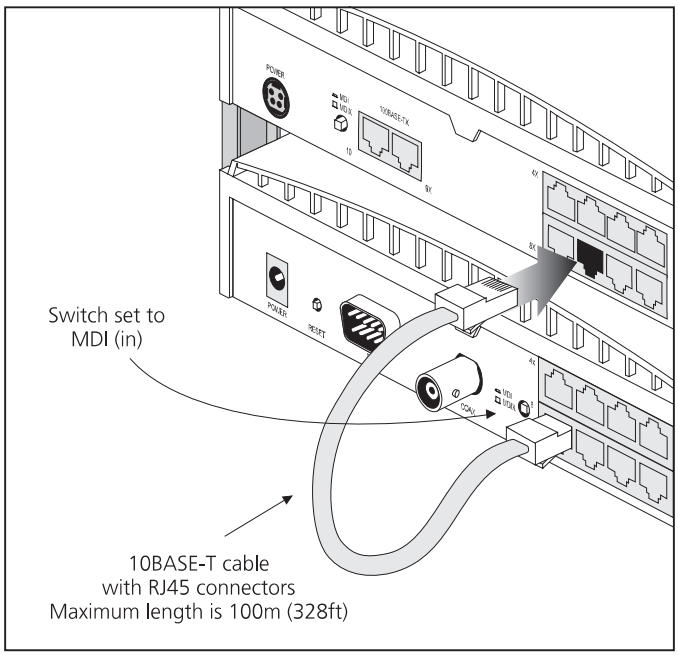
You can increase the number of workstations that can connect to your network by adding OfficeConnect hubs.

Connecting 10BASE-T Hubs

You can connect 10BASE-T OfficeConnect hubs to your switch using the following method for each hub:

1 Connect the MDI/MDIX port of the 10BASE-T hub to any of the switch's 10BASE-T ports (as shown in the diagram below).

2 Set the MDI/MDIX switch on the 10BASE-T hub to MDI (in).



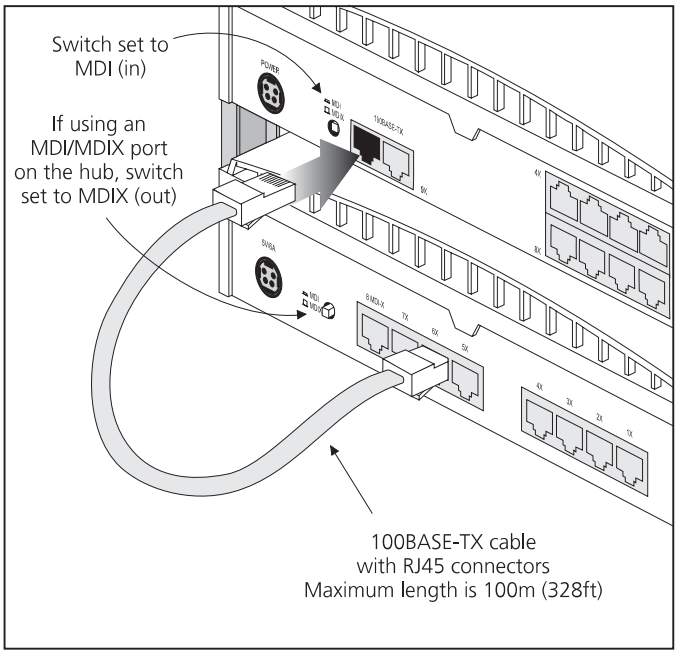
Correct Connections for a 10BASE-T Hub

Connecting 100BASE-TX Hubs

You can connect a 100BASE-TX OfficeConnect hub to your switch using the following method:

1 Connect any port of the 100BASE-TX hub to port 10 of the switch (as shown in the diagram). Ensure that the port you use on the 100BASE-TX hub is an MDIX port: this may mean setting its MDI/MDIX switch to MDIX (out).

2 Set the MDI/MDIX switch on the switch to MDI (in).



Correct Connections for a 100BASE-TX Hub

You can also connect a 100BASE-TX hub to port 9 of the switch. To do this:

1 Connect the MDI/MDIX port of the 100BASE-TX hub to port 9 of the switch.

2 Set the MDI/MDIX switch on the 100BASE-TX hub to MDI (in).

Checking Hub Connections

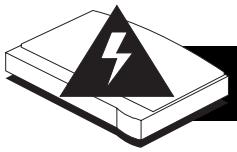
When you have connected all your hubs, power on the hubs and the switch. The Port Status LEDs for the ports you have used on both the hubs and the switch should be on. If they are not, check your connections and the settings of the MDI/MDIX switches.

Spot Checks

At frequent intervals, visually check that:

- The Alert LED is off — this is the best way to find out if there are problems with your network
- Case vents are not obstructed
- Cabling is secure and not pulled taut

If you suspect a problem, refer to "Problem Solving" on page 7.



IMPORTANT SAFETY INFORMATION

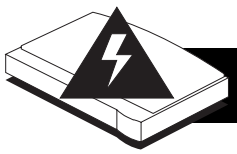
WARNING: *Warnings contain directions that you must follow for your personal safety. Follow all instructions carefully.*
Please read the following information carefully before installing the OfficeConnect unit:

- Exceptional care must be taken during installation and removal of the unit.
- Only stack the OfficeConnect unit with other OfficeConnect units.
- Only use the power adapter that is supplied with the unit to ensure compliance with international safety standards.
- It is essential that the power outlet is located near the unit and is accessible. You can only remove power to the OfficeConnect unit by disconnecting the power adapter from the unit or from the socket outlet.
- This unit operates under SELV conditions (Safety Extra Low Voltage) according to IEC 950, the conditions of which are maintained only if the equipment to which it is connected is also operational under SELV.
- There are no user-replaceable fuses or user-serviceable parts inside the unit. If you have a physical problem with the unit that cannot be solved with problem solving actions in this guide, contact your supplier.
- Disconnect the power adapter before moving the unit.

WARNING: Twisted Pair RJ45 ports. *These are RJ45 data sockets. They cannot be used as telephone sockets. Only connect RJ45 data connectors to these sockets.*

Power Cord Set:
This must be approved for the country where it is used:

USA and Canada	The cord set must be UL-approved and CSA certified. The minimum specification for the flexible cord is: No. 18 AWG Type SV or SJ 3-conductor The cord set must have a rated current capacity of at least 10A. The attachment plug must be an earth-grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A, 250V) configuration.
Denmark	The supply plug must comply with section 107-2-D1, standard DK2-1a or DK2-5a.
Switzerland	The supply plug must comply with SEV/ASE 1011.

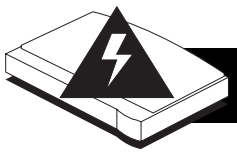


WICHTIGE SICHERHEITSHINWEISE

ACHTUNG: *Die Warnungen enthalten Anweisungen, die Sie zur eigenen Sicherheit zu befolgen haben.*
Lesen Sie bitte die folgenden Informationen sorgfältig durch, bevor Sie das Gerät einbauen:

- Auf besondere Vorsicht muß während des Ein- und Ausbaus des Gerätes geachtet werden.
- Stapeln Sie das Gerät nur mit anderen OfficeConnect Gerätes zusammen.
- Verwenden Sie nur das mit dem Gerät mitgelieferte Netzteil um die internationalen Sicherheitsstandards zu erfüllen.
- Die Netzsteckdose muß sich in unmittelbarer Nähe des Gerätes befinden und frei zugänglich sein. Sie können das Gerät nur spannungsfrei schalten, indem Sie das Steckernetzteil aus der Netzsteckdose ziehen oder die Verbindung zum Gerät unterbrechen.
- Dieses Gerät arbeitet mit SELV-Spannung (Safety Extra Low Voltage, Sicherheitskleinspannung) gemäß IEC950. Diese Bedingungen werden nur eingehalten, wenn die Geräte mit denen des Gerätes verbunden ist ebenfalls mit SELV-Spannung arbeiten.
- Es sind keine von dem Benutzer zu ersetzende oder zu wartende Teile in dem Gerät vorhanden. Wenn Sie ein Problem mit dem Gerät haben, das nicht mittels der Fehleranalyse in dieser Anleitung behoben werden kann, setzen Sie sich mit Ihrem Lieferanten in Verbindung.
- Bevor das Gerät ausgebaut wird ist das Netzteil zu ziehen.

ACHTUNG: Gedrehte paarfache RJ45 Anschlüsse. *Es sind RJ45 Datenanschlußbuchsen. Sie dürfen nicht als Telefonanschluß verwendet werden. Verbinden Sie nur RJ45 Datenstecker mit diesen Anschlüssen.*



L'INFORMATION DE SÉCURITÉ IMPORTANTE

AVERTISSEMENT: *Les avertissements contiennent les instructions que vous devez suivre pour votre sécurité personnelle. Suivre toutes les instructions avec soin.*
Veuillez lire à fond l'information suivante avant d'installer l'appareil:

- Le soin exceptionnel doit être pris pendant l'installation et l'enlèvement de l'appareil.
- Seulement entasser l'appareil avec les autres appareils OfficeConnect.
- Seulement utiliser la pièce de raccordement d'alimentation qui est fournie avec l'appareil pour assurer la conformité avec les normes de sécurité internationales.
- C'est essentiel que le socle de prise de courant du réseau soit localisé proche de l'appareil et soit accessible. Vous pouvez seulement enlever l'alimentation de l'appareil en débranchant la pièce de raccordement d'alimentation de l'unité ou du socle de prise de courant.
- Cet appareil fonctionne sous les conditiones SELV (Sécurité du Voltage le plus Bas) d'après IEC950, les conditions desquelles sont maintenues seulement si le matériel à qui il est branché est aussi en exploitation sous SELV.
- Il n'y a pas de parties remplaceables par les utilisateurs ou entretenues par les utilisateurs à l'intérieur de l'appareil. Si vous avez un problème physique avec l'appareil qui ne peut pas être résolu avec les actions de la résolution des problèmes dans ce guide, contacter votre fournisseur.
- Débrancher la pièce de raccordement d'alimentation avant de remuer l'appareil.

AVERTISSEMENT: Les ports RJ45 de paire tordue. *Ceux-ci sont les socles de données RJ45. Ils ne peuvent pas être utilisés comme socles de téléphone. Seulement brancher les connecteurs de données RJ45 à ces socles.*

Cordon électrique:
Il doit être agréé dans le pays d'utilisation:

Etats-Unis et Canada	Le cordon doit avoir reçu l'homologation des UL et un certificat de la CSA. Le cordon souple doit respecter, à titre minimum, les spécifications suivantes: calibre 18 AWG type SV ou 5J à 3 conducteurs Le cordon doit être en mesure d'acheminer un courant nominal d'au moins 10 A. La prise femelle de branchement doit être du type à mise à la terre (mise à la masse) et respecter la configuration NEMA 5-15P (15 A, 125 V) ou NEMA 6-15P (15 A, 250 V).

3Com Corporation, 5400 Bayfront Plaza, Santa Clara, California, 95052-8145, U.S.A.

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Problem Solving

The OfficeConnect switch has been designed to help you detect and solve possible problems with your network. These problems are rarely serious; the cause is usually a disconnected or damaged cable, or incorrect configuration. If this section does not solve your problem, contact your supplier for information on what to do next.

Perform these actions first:

- Ensure all equipment is powered on.
- Power each unit off, wait about 5 seconds and then power them on.

Check the following symptoms and solutions:

Power LED not lit. Check your power adapter connection. If there is still no power, you may have a faulty power adapter which needs replacing with an identical OfficeConnect power adapter. **Do not use any other power adapter with the switch.**

Port Status LED not lit for a port that has a connection. There is a problem with this connection. Check that you are using a 'straight-through' cable which is properly connected at both ends, and is not damaged. Also check that the equipment being connected to the switch is powered on, operating correctly and contains the correct type of connection.

Alert LED continuously lit. If the Alert LED is lit, there is a problem with the network. Starting with the 10/100BASE-TX ports, remove the port connections one at a time, waiting a few seconds between each port. If the Alert LED goes off, there is either a network loop or an excessive amount of broadcast traffic on that port connection:

- Network loop — Examine your connections and remove the loop. Each piece of equipment needs only one connection to your switch.
- Excessive amounts of broadcast frames — Some pieces of network equipment operate by sending out broadcast frames regularly. Refer to the documentation that accompanies the piece of network equipment.

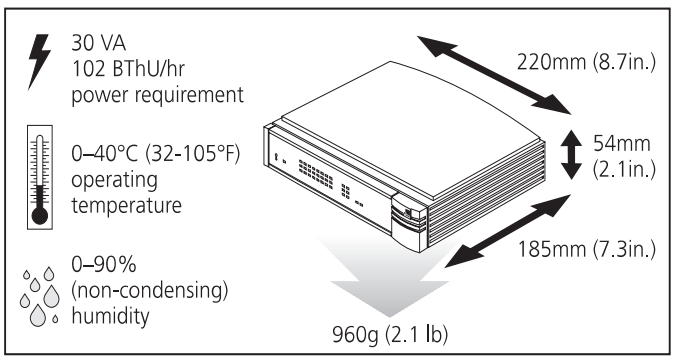
If the Alert LED is still lit after removing all of your connections, there may be a problem with your unit. Power it off, wait about 5 seconds and then power it on. If the Alert LED comes back on continuously, contact your supplier.

Link between the switch and an OfficeConnect hub not working. Check your connections; follow the information given in the "Connecting OfficeConnect Hubs to Your Switch" section. It is likely that an MDI/MDIX switch is incorrectly set on the switch (for 100BASE-TX) or hub (for 10BASE-T).

Full Duplex LED not lit when the switch is connected to another full duplex device (adapter card or unit). If the connected device does not support auto-negotiation, the switch will operate in half duplex mode (even if the device is operating in full duplex mode). In such a configuration, you may notice some degradation of network performance. 3Com recommends that you use devices that are capable of auto-negotiation.

Dimensions and Standards

Dimensions and Operating Conditions



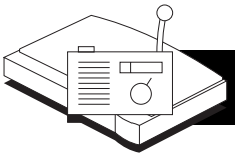
OfficeConnect Switch 280

Standards

Functional:	ISO 8802/3 IEEE 802.3
Safety:	UL 1950, EN 60950 CSA 22.2 #950, IEC 950
EMC:	EN 55022 Class B* EN 50082-1 FCC Part 15 Class B* ICES-003 Class B* VCCI Class B* AS/NZS 3548 Class B*

* Screened (shielded) cables must be used to ensure compliance with these EMC standards. Refer to the "EMC Statements" section for conditions of operation.

Environmental:	EN 60068 (IEC 68)
Acoustic Noise:	ISO 7779 ISO 9295



EMC STATEMENTS

FCC STATEMENT: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CSA STATEMENT: This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

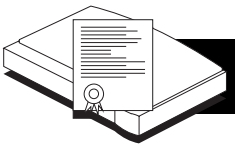
この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

The user may find the following booklet prepared by the Federal Communications Commission helpful:

'*How to Identify and Resolve Radio-TV Interference Problems*'

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

In order to meet FCC emissions limits, this equipment must be used only with cables which comply with IEEE 802.3.



LIFETIME LIMITED WARRANTY

The duration of the warranty for the OfficeConnect Switch 280 (3C16732) is lifetime, including the power adapter.

Advance hardware exchange is available during the first year from your date of purchase in accordance with 3Com's standard terms and conditions for such service. After the first year, the warranty reverts to 3Com's standard lifetime limited warranty.

To qualify for the lifetime limited warranty and the advance hardware exchange, you must submit the appropriate product warranty registration card to 3Com, otherwise this product will be warranted for a period of one (1) year without advance hardware exchange.

HARDWARE: 3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Network adapters	Lifetime
Other hardware products	One year (unless otherwise specified above)
Spare parts and spares kits	90 days

If a product does not operate as warranted above during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

SOFTWARE: 3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its Authorized Reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation with respect to this express warranty shall be (at 3Com's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to 3Com's applicable published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product.

STANDARD WARRANTY SERVICE: Standard warranty service for hardware products may be obtained by delivering the defective product, accompanied by a copy of the dated proof of purchase, to 3Com's Corporate Service Center or to an Authorized 3Com Service Center during the applicable warranty period. Standard warranty service for software products may be obtained by telephoning 3Com's Corporate Service Center or an Authorized 3Com Service Center, within the warranty period. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after receipt of the defective product by 3Com.

WARRANTIES EXCLUSIVE: IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND SATISFACTORY QUALITY. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY. TO THE FULL EXTENT ALLOWED BY LAW 3COM ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers or the limitation of liability for personal injury, so the above limitations and exclusions may be limited in their application to you. This warranty gives you specific legal rights which may vary depending on local law.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

3Com Corporation, 5400 Bayfront Plaza, Santa Clara, CA, 95052-8145, U.S.A. Tel: (408) 764-5000

9/1/96